

Listing of Claims

1-48 (Cancelled)

49. (Withdrawn) A nozzle tip comprising:

a tip retainer comprising a first and a second end region and a central bore extending between said first and said second end regions, said central bore comprising an internally threaded portion disposed proximate said first end region configured to removeably engage with a nozzle housing and an internal annular step extending generally radially inwardly proximate said second end region, wherein a distal most end face of said second end region is substantially radially planar;

a tip insert axially received in said central bore of said tip retainer, said tip insert further comprising a tip channel, at least one outlet aperture in fluid communication with said tip channel, and an external annular step extending generally radially outwardly from an exterior surface of said tip insert that substantially abuts against said internal annular step of said tip retainer, wherein said

internal annular step and said external annular step
comprise a stop shoulder that limits axial movement of said
tip insert from said first end region towards said second
end region of said tip retainer;
a seal ring comprising a third end region having a distal most
substantially radially planar end face and a fourth end
region configured to seal against at least a portion of a
mold, wherein said seal ring comprises a material having a
lower thermal conductivity than said tip retainer; and
a substantially radially planar weld junction disposed between
said distal most substantially radially planar end faces of
said tip retainer and said seal ring.

50. (Withdrawn) The nozzle tip of claim 49 wherein said tip
insert further comprises a shank portion and an end portion,
wherein said external annular step extends generally radially
outwardly from an exterior surface of said shank portion.

51. (Withdrawn) The nozzle tip of claim 50 wherein said shank
portion comprises a material having a high thermal conductivity
and said end portion comprises a material having a high wear-

resistance.

52. (Withdrawn) The nozzle tip of claim 51 wherein said shank portion comprises a copper alloy and said end portion comprises a carbide alloy.

53. (Withdrawn) The nozzle tip of claim 49 wherein said fourth end region of said seal ring further comprises a generally frustoconical exterior surface having a minimum diameter proximate said third end region and a maximum diameter proximate a distal most end of said fourth end region.

54. (Withdrawn) The nozzle tip of claim 49 wherein an exterior surface of said second and said third end regions proximate said substantially radially planar weld junction comprise outer perimeters that substantially correspond to each other.

55. (Withdrawn) The nozzle tip of claim 54 wherein said exterior surface of said tip retainer further comprises a circumferential groove disposed proximate said second end region and a heater disposed about at least a portion of said exterior surface of

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said tip retainer and within said circumferential groove.

56. (Withdrawn) The nozzle tip of claim 54 wherein said seal ring further comprises a cavity axially aligned with said central bore and extending from said third end region to said fourth end region, wherein said third end region comprises an inner diameter substantially corresponding to an inner diameter of said first central bore proximate said second end region.

57. (Withdrawn) The nozzle tip of claim 56 wherein said substantially radially planar weld junction extends from said exterior surfaces of said seal ring and said tip retainer to an inner surface of said cavity and said central bore.

58. (Previously Presented) A nozzle tip comprising:

a tip retainer comprising:

a first end region;

a second end region comprising a substantially
radially planar distal most end face; and

a central bore extending between said first and said
second end regions; and

a seal ring comprising a third end region having a
substantially radially planar distal most end face welded to
said substantially radially planar distal most end face of said
tip retainer and a fourth end region configured to seal against
at least a portion of a mold, wherein said seal ring comprises a
material having a lower thermal conductivity than said tip
retainer.

59. (Previously Presented) The nozzle tip of claim 58 wherein
said third end region comprises an exterior surface having an
outer perimeter substantially corresponding to an outer
perimeter of an exterior surface of said second end region
proximate said weld.

60. (Previously Presented) The nozzle tip of claim 59 wherein said seal ring further comprises a cavity axially aligned with said central bore and extending from said third end region to said fourth end region of said seal ring, wherein said third end region comprises an inner diameter substantially corresponding to an inner diameter of said second end region of said first central bore proximate said weld.

61. (Previously Presented) The nozzle tip of claim 60 wherein said weld extends substantially radially inwardly along said substantially radially planar distal most end faces of said tip retainer and said seal ring from said exterior surfaces of said seal ring and said tip retainer to an inner surface of said cavity and said central bore.

62. (Previously Presented) The nozzle tip of claim 59 wherein said fourth end region of said seal ring further comprises a generally frustoconical outer surface having a minimum diameter proximate said third end region and a maximum diameter proximate a distal most end of said fourth end region.

63. (Previously Presented) The nozzle tip of claim 59 wherein said exterior surface of said tip retainer further comprises a circumferential groove disposed a spaced distance from said substantially radially planar distal most end face of said second end region, wherein a portion of a heater is disposed within said circumferential groove and about said exterior surface of said first end region of said tip retainer.

64. (Previously Presented) The nozzle tip of claim 58 further comprising a tip insert axially received in said central bore of said tip retainer, said tip insert further comprising a shank end, a tip end having an outlet aperture, and an external annular step extending generally radially outwardly from an exterior surface of said shank end that substantially abuts against an internal annular step extending generally radially inwardly from said second end region of said central bore, wherein said internal and said external annular steps comprise a stop shoulder that limits axial movement of said tip insert from said first end region towards said second end region of said tip retainer.

65. (Previously Presented) A nozzle tip comprising:

a tip retainer comprising a first central bore extending between a first and a second end region wherein said second end region comprises a substantially radially planar distal most end face; and

a seal ring comprising a material having a lower thermal conductivity than said tip retainer, said seal ring further comprising:

a third end region having a substantially radially planar distal most end face welded to said substantially radially planar distal most end face of said tip retainer;

a fourth end region having a generally frustoconical exterior surface having a minimum diameter proximate said third end region and a maximum diameter proximate a distal most end of said fourth end region; and

a second central bore extending between said third and said fourth end regions, said second central bore having an inner diameter proximate said third end region substantially corresponding to an inner diameter of said second end region of said first central bore.

66. (Previously Presented) The nozzle tip of claim 65 wherein said tip retainer comprises a steel material and said seal ring comprises a copper alloy material.

67. (Previously Presented) The nozzle tip of claim 65 wherein said third end region of said seal ring comprises an exterior surface having a perimeter substantially corresponding to a perimeter of an exterior surface of said second end region of said tip retainer proximate said weld.

68. (Previously Presented) The nozzle tip of claim 67 wherein said weld extends substantially radially inwardly from said exterior surfaces of said seal ring and said tip retainer to an inner surface of said first and said second central bores along said substantially radially planar distal most end faces.

69. (Previously Presented) The nozzle tip of claim 65 further comprising a tip insert axially received in said first central bore of said tip retainer, said tip insert further comprising a shank end, a tip end, and an external annular step extending generally radially outwardly from an exterior surface of said

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shank end that substantially abuts against an internal annular step extending generally radially inwardly from said second end region of said first central bore, wherein said internal and said external annular steps comprise a stop shoulder that limits axial movement of said tip insert from said first end region towards said second end region of said tip retainer.